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## RAW SEQUENCE LISTING

DATE: 01/09/2003

PATENT APPLICATION: US/10/023,649

TIME: 13:34:41

Input Set : D:\NEL-0001 Sequence Listing.txt

Output Set: N:\CRF4\01092003\J023649.raw

3 <110> APPLICANT: The Minister of National Defence, Government of Canada  
 4 Nagata, Leslie P  
 5 Wong, Jonathon P  
 7 <120> TITLE OF INVENTION: Novel DNA-Based Vaccine Against the Encephalitis  
 Alphaviruses  
 9 <130> FILE REFERENCE: NEL-001  
 11 <140> CURRENT APPLICATION NUMBER: 10/023,649  
 C--> 12 <141> CURRENT FILING DATE: 2002-12-27  
 14 <150> PRIOR APPLICATION NUMBER: 60/256,948  
 15 <151> PRIOR FILING DATE: 2000-12-21  
 17 <160> NUMBER OF SEQ ID NOS: 7  
 19 <170> SOFTWARE: PatentIn version 3.1  
 21 <210> SEQ ID NO: 1  
 22 <211> LENGTH: 11484  
 23 <212> TYPE: DNA  
 24 <213> ORGANISM: Western equine encephalomyelitis virus - strain 71V-1658  
 26 <220> FEATURE:  
 27 <221> NAME/KEY: CDS  
 28 <222> LOCATION: (25)..(7428)  
 29 <223> OTHER INFORMATION: 5' UTR <1 .. 24  
 32 <220> FEATURE:  
 33 <221> NAME/KEY: CDS  
 34 <222> LOCATION: (7473)..(11183)  
 35 <223> OTHER INFORMATION: encodes nucleocapsid, E3, E2, 6K and E1 proteins  
 38 <400> SEQUENCE: 1  
 39 accctacaaa ctaatcgatc caat atg gaa aga att cac gtt gac tta gat 51  
 40 Met Glu Arg Ile His Val Asp Leu Asp  
 41 1 5  
 43 gct gac agc ccg tat gtc aag tcg tta cag cgg acg ttt cca caa ttt 99  
 44 Ala Asp Ser Pro Tyr Val Lys Ser Leu Gln Arg Thr Phe Pro Gln Phe  
 45 10 15 20 25  
 47 gag atc gaa gca agg cag gtc act gac aat gac cat gcc aat gcc aga 147  
 48 Glu Ile Glu Ala Arg Gln Val Thr Asp Asn Asp His Ala Asn Ala Arg  
 49 30 35 40  
 51 gcg ttt tcg cat gtg gca aca aag ctc att gag agc gaa gtc gac cgg 195  
 52 Ala Phe Ser His Val Ala Thr Lys Leu Ile Glu Ser Glu Val Asp Arg  
 53 45 50 55  
 55 gac caa gtt atc ttg gac att gga agt gcg ccc gtc aga cat gca cat 243  
 56 Asp Gln Val Ile Leu Asp Ile Gly Ser Ala Pro Val Arg His Ala His  
 57 60 65 70  
 59 tcc aat cac cgc tat cat tgt atc tgc cct atg ata agc gct gaa gac 291  
 60 Ser Asn His Arg Tyr His Cys Ile Cys Pro Met Ile Ser Ala Glu Asp  
 61 75 80 85  
 63 ccg gac aga cta caa cgg tat gca gaa aga ctt aag aaa agt gac att 339

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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 64  | Pro | Asp | Arg | Leu | Gln | Arg | Tyr | Ala | Glu | Arg | Leu | Lys | Lys | Ser | Asp | Ile |      |
| 65  | 90  |     |     |     |     | 95  |     |     |     |     | 100 |     |     |     |     | 105 |      |
| 67  | acc | gac | aag | aac | ata | gcc | tct | aag | gcg | gca | gac | ctg | ctg | gaa | gtc | atg | 387  |
| 68  | Thr | Asp | Lys | Asn | Ile | Ala | Ser | Lys | Ala | Ala | Asp | Leu | Leu | Glu | Val | Met |      |
| 69  |     |     |     |     | 110 |     |     |     |     | 115 |     |     |     |     |     | 120 |      |
| 71  | tca | aca | cca | gac | gca | gag | act | cca | tct | ctg | tgt | atg | cac | aca | gac | gcc | 435  |
| 72  | Ser | Thr | Pro | Asp | Ala | Glu | Thr | Pro | Ser | Leu | Cys | Met | His | Thr | Asp | Ala |      |
| 73  |     |     |     | 125 |     |     |     |     | 130 |     |     |     |     | 135 |     |     |      |
| 75  | acg | tgt | agg | tac | ttt | gga | agt | gta | gca | gta | tac | caa | gat | gtg | tac | gca | 483  |
| 76  | Thr | Cys | Arg | Tyr | Phe | Gly | Ser | Val | Ala | Val | Tyr | Gln | Asp | Val | Tyr | Ala |      |
| 77  |     | 140 |     |     |     |     |     | 145 |     |     |     | 150 |     |     |     |     |      |
| 79  | gtc | cat | gca | ccg | aca | tca | atc | tac | cac | cag | gcg | ctt | aaa | gga | gtt | agg | 531  |
| 80  | Val | His | Ala | Pro | Thr | Ser | Ile | Tyr | His | Gln | Ala | Leu | Lys | Gly | Val | Arg |      |
| 81  |     | 155 |     |     |     |     | 160 |     |     |     |     | 165 |     |     |     |     |      |
| 83  | aca | att | tac | tgg | ata | ggc | ttt | gac | acg | acc | cct | ttt | atg | tac | aaa | aac | 579  |
| 84  | Thr | Ile | Tyr | Trp | Ile | Gly | Phe | Asp | Thr | Thr | Pro | Phe | Met | Tyr | Lys | Asn |      |
| 85  | 170 |     |     |     |     | 175 |     |     |     | 180 |     |     |     |     |     | 185 |      |
| 87  | atg | gca | ggt | tcc | tac | cct | act | tac | aac | acg | aac | tgg | gct | gac | gag | aga | 627  |
| 88  | Met | Ala | Gly | Ser | Tyr | Pro | Thr | Tyr | Asn | Thr | Asn | Trp | Ala | Asp | Glu | Arg |      |
| 89  |     |     |     | 190 |     |     |     |     | 195 |     |     |     |     | 200 |     |     |      |
| 91  | gta | ttg | gaa | gca | cgt | aac | att | ggc | ctc | ggt | aac | tca | gat | ctt | cag | gag | 675  |
| 92  | Val | Leu | Glu | Ala | Arg | Asn | Ile | Gly | Leu | Gly | Asn | Ser | Asp | Leu | Gln | Glu |      |
| 93  |     |     | 205 |     |     |     |     | 210 |     |     |     |     | 215 |     |     |     |      |
| 95  | agc | agg | ctt | gga | aaa | ctc | tca | atc | ctt | agg | aag | aag | agg | ctc | caa | cct | 723  |
| 96  | Ser | Arg | Leu | Gly | Lys | Leu | Ser | Ile | Leu | Arg | Lys | Lys | Arg | Leu | Gln | Pro |      |
| 97  |     | 220 |     |     |     |     |     | 225 |     |     |     |     | 230 |     |     |     |      |
| 99  | act | aat | aag | atc | ata | ttc | tcg | gtt | ggg | tca | aca | atc | tac | aca | gaa | gat | 771  |
| 100 | Thr | Asn | Lys | Ile | Ile | Phe | Ser | Val | Gly | Ser | Thr | Ile | Tyr | Thr | Glu | Asp |      |
| 101 |     | 235 |     |     |     | 240 |     |     |     |     | 245 |     |     |     |     |     |      |
| 103 | aga | tca | ctg | tta | cgt | agc | tgg | cat | ctt | cca | aac | gtg | ttc | cac | ttg | aaa | 819  |
| 104 | Arg | Ser | Leu | Leu | Arg | Ser | Trp | His | Leu | Pro | Asn | Val | Phe | His | Leu | Lys |      |
| 105 | 250 |     |     |     | 255 |     |     |     |     | 260 |     |     |     |     |     | 265 |      |
| 107 | gga | aag | tct | aac | ttc | aca | ggt | aga | tgt | ggg | acc | att | gtc | agc | tgt | gaa | 867  |
| 108 | Gly | Lys | Ser | Asn | Phe | Thr | Gly | Arg | Cys | Gly | Thr | Ile | Val | Ser | Cys | Glu |      |
| 109 |     |     |     | 270 |     |     |     |     | 275 |     |     |     |     | 280 |     |     |      |
| 111 | ggg | tac | gtc | atc | aaa | aag | ata | acg | atc | agc | cca | gga | cta | tac | ggt | aaa | 915  |
| 112 | Gly | Tyr | Val | Ile | Lys | Lys | Ile | Thr | Ile | Ser | Pro | Gly | Leu | Tyr | Gly | Lys |      |
| 113 |     |     | 285 |     |     |     |     | 290 |     |     |     |     | 295 |     |     |     |      |
| 115 | gtt | gag | aac | ttg | gcg | tcc | aca | atg | cat | cgc | gag | ggt | ttc | ttg | agt | tgc | 963  |
| 116 | Val | Glu | Asn | Leu | Ala | Ser | Thr | Met | His | Arg | Glu | Gly | Phe | Leu | Ser | Cys |      |
| 117 |     | 300 |     |     |     |     | 305 |     |     |     |     | 310 |     |     |     |     |      |
| 119 | aaa | gtc | aca | gat | acg | ctg | cgc | ggc | gag | agg | gtt | tct | ttt | gct | gtg | tgt | 1011 |
| 120 | Lys | Val | Thr | Asp | Thr | Leu | Arg | Gly | Glu | Arg | Val | Ser | Phe | Ala | Val | Cys |      |
| 121 |     | 315 |     |     |     | 320 |     |     |     |     | 325 |     |     |     |     |     |      |
| 123 | acg | tat | gta | cca | gcc | aca | ctt | tgc | gat | cag | atg | aca | ggg | att | ctg | gca | 1059 |
| 124 | Thr | Tyr | Val | Pro | Ala | Thr | Leu | Cys | Asp | Gln | Met | Thr | Gly | Ile | Leu | Ala |      |
| 125 | 330 |     |     |     | 335 |     |     |     | 340 |     |     |     |     |     |     | 345 |      |
| 127 | act | gac | gtt | agt | gtg | gat | gac | gca | caa | aaa | cta | ttg | gtt | ggg | ctc | aac | 1107 |
| 128 | Thr | Asp | Val | Ser | Val | Asp | Asp | Ala | Gln | Lys | Leu | Leu | Val | Gly | Leu | Asn |      |

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|     |   |     |     |     |     |     |      |
|-----|---|-----|-----|-----|-----|-----|------|
| 129 |   | 350 |     | 355 |     | 360 |      |
| 131 | caa agg att gtc gtc aat ggt agg acg caa aga aat act aac aca atg |     |     |     |     |     | 1155 |
| 132 | Gln Arg Ile Val Val Asn Gly Arg Thr Gln Arg Asn Thr Asn Thr Met |     |     |     |     |     |      |
| 133 |   | 365 |     | 370 |     | 375 |      |
| 135 | cag aac tat cta tta cca gtg gtc gcc cag gcg ttt tcc agg tgg gcg |     |     |     |     |     | 1203 |
| 136 | Gln Asn Tyr Leu Leu Pro Val Val Ala Gln Ala Phe Ser Arg Trp Ala |     |     |     |     |     |      |
| 137 |   | 380 |     | 385 |     | 390 |      |
| 139 | cgt gaa cat cgt gcc gac ttg gac gac gag aaa gaa cta ggg gtg cgg |     |     |     |     |     | 1251 |
| 140 | Arg Glu His Arg Ala Asp Leu Asp Asp Glu Lys Glu Leu Gly Val Arg |     |     |     |     |     |      |
| 141 |   | 395 |     | 400 |     | 405 |      |
| 143 | gag cgc act ctt act atg ggc tgc tgc tgg gct ttc aag acc cag aaa |     |     |     |     |     | 1299 |
| 144 | Glu Arg Thr Leu Thr Met Gly Cys Cys Trp Ala Phe Lys Thr Gln Lys |     |     |     |     |     |      |
| 145 | 410   |     | 415 |     | 420 |     | 425  |
| 147 | atc aca tcc atc tac aag aag cct ggt acg caa aca att aag aaa gta |     |     |     |     |     | 1347 |
| 148 | Ile Thr Ser Ile Tyr Lys Lys Pro Gly Thr Gln Thr Ile Lys Lys Val |     |     |     |     |     |      |
| 149 |   | 430 |     | 435 |     | 440 |      |
| 151 | cct gcc gtc ttt gac tca ttt gtg att cca cgc ctt acc agc cac ggg |     |     |     |     |     | 1395 |
| 152 | Pro Ala Val Phe Asp Ser Phe Val Ile Pro Arg Leu Thr Ser His Gly |     |     |     |     |     |      |
| 153 |   | 445 |     | 450 |     | 455 |      |
| 155 | ctc gat atg ggc ttc cgc cgt agg ctc aag ctg ctg ctt gaa cca act |     |     |     |     |     | 1443 |
| 156 | Leu Asp Met Gly Phe Arg Arg Arg Leu Lys Leu Leu Leu Glu Pro Thr |     |     |     |     |     |      |
| 157 |   | 460 |     | 465 |     | 470 |      |
| 159 | gtc aaa ccc gca ccg gct att aca atg gcc gat gtg gag cat ctg cgt |     |     |     |     |     | 1491 |
| 160 | Val Lys Pro Ala Pro Ala Ile Thr Met Ala Asp Val Glu His Leu Arg |     |     |     |     |     |      |
| 161 |   | 475 |     | 480 |     | 485 |      |
| 163 | ggc tta cag caa gaa gct gaa gaa gtg gct gca gcg gaa gag atc aga |     |     |     |     |     | 1539 |
| 164 | Gly Leu Gln Gln Glu Ala Glu Glu Val Ala Ala Glu Glu Ile Arg     |     |     |     |     |     |      |
| 165 | 490   |     | 495 |     | 500 |     | 505  |
| 167 | gaa gcc ctg cca ccc ttg ctc cct gaa ata gaa aaa gag acc gta gag |     |     |     |     |     | 1587 |
| 168 | Glu Ala Leu Pro Pro Leu Leu Pro Glu Ile Glu Lys Glu Thr Val Glu |     |     |     |     |     |      |
| 169 |   | 510 |     | 515 |     | 520 |      |
| 171 | gca gaa gta gac ctc att atg caa gag gca gga gca ggt agc gtg gag |     |     |     |     |     | 1635 |
| 172 | Ala Glu Val Asp Leu Ile Met Gln Glu Ala Gly Ala Gly Ser Val Glu |     |     |     |     |     |      |
| 173 |   | 525 |     | 530 |     | 535 |      |
| 175 | aca cca cga gga cac atc agg gtg aca agt tac cca ggc gaa gag aag |     |     |     |     |     | 1683 |
| 176 | Thr Pro Arg Gly His Ile Arg Val Thr Ser Tyr Pro Gly Glu Glu Lys |     |     |     |     |     |      |
| 177 |   | 540 |     | 545 |     | 550 |      |
| 179 | att ggg tct tac gct ata ctt tca ccc cag gcg gta ttg aat agt gaa |     |     |     |     |     | 1731 |
| 180 | Ile Gly Ser Tyr Ala Ile Leu Ser Pro Gln Ala Val Leu Asn Ser Glu |     |     |     |     |     |      |
| 181 |   | 555 |     | 560 |     | 565 |      |
| 183 | aaa ctg gcg tgt atc cac cca ttg gcg gaa caa gta ctg gta atg act |     |     |     |     |     | 1779 |
| 184 | Lys Leu Ala Cys Ile His Pro Leu Ala Glu Gln Val Leu Val Met Thr |     |     |     |     |     |      |
| 185 | 570   |     | 575 |     | 580 |     | 585  |
| 187 | cac aaa ggt agg gca ggg aga tac aaa gtc gag cca tac cac ggt aag |     |     |     |     |     | 1827 |
| 188 | His Lys Gly Arg Ala Gly Arg Tyr Lys Val Glu Pro Tyr His Gly Lys |     |     |     |     |     |      |
| 189 |   | 590 |     | 595 |     | 600 |      |
| 191 | gtc att gta cca gaa ggg acg gcg gtc cct gtt caa gac ttc cag gca |     |     |     |     |     | 1875 |
| 192 | Val Ile Val Pro Glu Gly Thr Ala Val Pro Val Gln Asp Phe Gln Ala |     |     |     |     |     |      |
| 193 |   | 605 |     | 610 |     | 615 |      |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 195 | ttg | agt | gag | agc | gct | acg | atc | gtt | ttc | aac | gag | agg | gag | ttc | gta | aac | 1923 |
| 196 | Leu | Ser | Glu | Ser | Ala | Thr | Ile | Val | Phe | Asn | Glu | Arg | Glu | Phe | Val | Asn |      |
| 197 |     |     | 620 |     |     |     |     | 625 |     |     |     |     |     | 630 |     |     |      |
| 199 | aga | tac | ctg | cac | cac | atc | gca | atc | aac | gga | gga | gcg | cta | aac | act | gac | 1971 |
| 200 | Arg | Tyr | Leu | His | His | Ile | Ala | Ile | Asn | Gly | Gly | Ala | Leu | Asn | Thr | Asp |      |
| 201 |     |     | 635 |     |     |     | 640 |     |     |     |     | 645 |     |     |     |     |      |
| 203 | gaa | gag | tac | tat | aag | act | gta | aag | act | cag | gac | aca | gac | tca | gaa | tac | 2019 |
| 204 | Glu | Glu | Tyr | Tyr | Lys | Thr | Val | Lys | Thr | Gln | Asp | Thr | Asp | Ser | Glu | Tyr |      |
| 205 | 650 |     |     |     |     | 655 |     |     |     | 660 |     |     |     |     | 665 |     |      |
| 207 | gtc | ttc | gat | att | gac | gca | cga | aag | tgt | gtt | aag | cga | gaa | gac | gca | ggt | 2067 |
| 208 | Val | Phe | Asp | Ile | Asp | Ala | Arg | Lys | Cys | Val | Lys | Arg | Glu | Asp | Ala | Gly |      |
| 209 |     |     |     | 670 |     |     |     |     | 675 |     |     |     |     | 680 |     |     |      |
| 211 | ccc | ttg | tgc | cta | acc | ggt | gat | ctg | gta | gat | cca | cca | ttt | cac | gag | ttt | 2115 |
| 212 | Pro | Leu | Cys | Leu | Thr | Gly | Asp | Leu | Val | Asp | Pro | Pro | Phe | His | Glu | Phe |      |
| 213 |     |     |     | 685 |     |     |     | 690 |     |     |     |     |     | 695 |     |     |      |
| 215 | gcg | tac | gag | agt | ctc | aag | aca | cga | cca | gca | gca | cct | cac | aaa | gtc | cca | 2163 |
| 216 | Ala | Tyr | Glu | Ser | Leu | Lys | Thr | Arg | Pro | Ala | Ala | Pro | His | Lys | Val | Pro |      |
| 217 |     |     | 700 |     |     |     |     | 705 |     |     |     |     |     | 710 |     |     |      |
| 219 | acc | atc | gga | gtc | tat | gga | gtg | cca | ggt | tca | ggt | aaa | tct | gga | atc | atc | 2211 |
| 220 | Thr | Ile | Gly | Val | Tyr | Gly | Val | Pro | Gly | Ser | Gly | Lys | Ser | Gly | Ile | Ile |      |
| 221 |     |     | 715 |     |     |     | 720 |     |     |     |     | 725 |     |     |     |     |      |
| 223 | aaa | agc | gct | gtg | act | aag | aaa | gat | ctg | gtt | gtg | agt | gcg | aag | aag | gaa | 2259 |
| 224 | Lys | Ser | Ala | Val | Thr | Lys | Lys | Asp | Leu | Val | Val | Ser | Ala | Lys | Lys | Glu |      |
| 225 | 730 |     |     |     |     | 735 |     |     |     | 740 |     |     |     |     | 745 |     |      |
| 227 | aac | tgc | gca | gaa | atc | agg | gat | gta | agg | agg | atg | aga | cgt | atg | gat |     | 2307 |
| 228 | Asn | Cys | Ala | Glu | Ile | Arg | Asp | Val | Arg | Arg | Met | Arg | Arg | Met | Asp |     |      |
| 229 |     |     |     | 750 |     |     |     |     | 755 |     |     |     |     | 760 |     |     |      |
| 231 | gtt | gct | gct | agg | act | gtc | gat | tca | gtg | ctt | cta | aat | ggg | gtt | aag | cac | 2355 |
| 232 | Val | Ala | Ala | Arg | Thr | Val | Asp | Ser | Val | Leu | Leu | Asn | Gly | Val | Lys | His |      |
| 233 |     |     |     | 765 |     |     |     |     | 770 |     |     |     |     | 775 |     |     |      |
| 235 | ccc | gtt | aac | act | ctg | tac | att | gat | gag | gca | ttt | gcc | tgc | cat | gca | ggg | 2403 |
| 236 | Pro | Val | Asn | Thr | Leu | Tyr | Ile | Asp | Glu | Ala | Phe | Ala | Cys | His | Ala | Gly |      |
| 237 |     |     | 780 |     |     |     |     | 785 |     |     |     |     |     | 790 |     |     |      |
| 239 | acg | ctg | ctg | gca | ctg | att | gcc | atc | gtc | aaa | cct | aag | aaa | gtg | gta | ttg | 2451 |
| 240 | Thr | Leu | Leu | Ala | Leu | Ile | Ala | Ile | Val | Lys | Pro | Lys | Lys | Val | Val | Leu |      |
| 241 |     |     | 795 |     |     |     | 800 |     |     |     |     | 805 |     |     |     |     |      |
| 243 | tgc | ggg | gac | cca | aaa | caa | tgc | ggc | ttc | ttt | aac | atg | atg | tgc | ctg | aaa | 2499 |
| 244 | Cys | Gly | Asp | Pro | Lys | Gln | Cys | Gly | Phe | Phe | Asn | Met | Met | Cys | Leu | Lys |      |
| 245 | 810 |     |     |     |     | 815 |     |     |     | 820 |     |     |     |     | 825 |     |      |
| 247 | gta | cat | ttt | aac | cat | gac | ata | tgc | act | gaa | gtg | tac | cat | aaa | agc | atc | 2547 |
| 248 | Val | His | Phe | Asn | His | Asp | Ile | Cys | Thr | Glu | Val | Tyr | His | Lys | Ser | Ile |      |
| 249 |     |     |     | 830 |     |     |     |     | 835 |     |     |     |     | 840 |     |     |      |
| 251 | tct | agg | agg | tgc | aca | cag | act | gta | acc | gcc | atc | gtc | tcc | acg | ctc | ttc | 2595 |
| 252 | Ser | Arg | Arg | Cys | Thr | Gln | Thr | Val | Thr | Ala | Ile | Val | Ser | Thr | Leu | Phe |      |
| 253 |     |     |     | 845 |     |     |     |     | 850 |     |     |     |     | 855 |     |     |      |
| 255 | tac | gac | aag | cga | atg | aag | acg | gtt | aac | cca | tgt | gct | gat | aaa | atc | atc | 2643 |
| 256 | Tyr | Asp | Lys | Arg | Met | Lys | Thr | Val | Asn | Pro | Cys | Ala | Asp | Lys | Ile | Ile |      |
| 257 |     |     | 860 |     |     |     |     | 865 |     |     |     |     |     | 870 |     |     |      |
| 259 | ata | gat | acc | aca | ggg | acc | aca | aag | ccg | cac | aaa | gat | gat | ctg | att | cta | 2691 |

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|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|------|
| 260 | Ile | Asp | Thr | Thr  | Gly | Thr | Thr | Lys | Pro  | His | Lys | Asp | Asp  | Leu | Ile | Leu |      |
| 261 |     | 875 |     |      |     |     |     | 880 |      |     |     |     | 885  |     |     |     |      |
| 263 | acc | tgt | ttc | aga  | gga | tgg | gtg | aaa | cag  | cta | cag | att | gac  | tac | aaa | aat | 2739 |
| 264 | Thr | Cys | Phe | Arg  | Gly | Trp | Val | Lys | Gln  | Leu | Gln | Ile | Asp  | Tyr | Lys | Asn |      |
| 265 | 890 |     |     |      |     | 895 |     |     |      |     | 900 |     |      |     |     | 905 |      |
| 267 | cac | gaa | atc | atg  | act | gcg | gct | gca | tcg  | caa | gga | ctt | acg  | cgg | aaa | ggc | 2787 |
| 268 | His | Glu | Ile | Met  | Thr | Ala | Ala | Ala | Ser  | Gln | Gly | Leu | Thr  | Arg | Lys | Gly |      |
| 269 |     |     |     |      | 910 |     |     |     |      | 915 |     |     |      |     | 920 |     |      |
| 271 | gtt | tat | gct | gtc  | agg | tac | aaa | gtc | aac  | gag | aat | cca | ctc  | tac | tcg | cag | 2835 |
| 272 | Val | Tyr | Ala | Val  | Arg | Tyr | Lys | Val | Asn  | Glu | Asn | Pro | Leu  | Tyr | Ser | Gln |      |
| 273 |     |     |     | 925  |     |     |     |     | 930  |     |     |     | 935  |     |     |     |      |
| 275 | act | tct | gag | cac  | gtg | aac | gtg | tta | ctt  | aca | cgc | aca | gaa  | aaa | cgc | att | 2883 |
| 276 | Thr | Ser | Glu | His  | Val | Asn | Val | Leu | Leu  | Thr | Arg | Thr | Glu  | Lys | Arg | Ile |      |
| 277 |     |     | 940 |      |     |     |     | 945 |      |     |     |     | 950  |     |     |     |      |
| 279 | gtc | tgg | aag | acg  | cta | gct | ggt | gat | ccc  | tgg | ata | aag | aca  | ctt | aca | gct | 2931 |
| 280 | Val | Trp | Lys | Thr  | Leu | Ala | Gly | Asp | Pro  | Trp | Ile | Lys | Thr  | Leu | Thr | Ala |      |
| 281 |     | 955 |     |      |     | 960 |     |     |      |     |     | 965 |      |     |     |     |      |
| 283 | aaa | tat | ccc | ggg  | gat | ttc | acg | gct | tca  | ttg | gac | gac | tgg  | cag | cgc | gaa | 2979 |
| 284 | Lys | Tyr | Pro | Gly  | Asp | Phe | Thr | Ala | Ser  | Leu | Asp | Asp | Trp  | Gln | Arg | Glu |      |
| 285 | 970 |     |     |      |     | 975 |     |     |      | 980 |     |     |      |     | 985 |     |      |
| 287 | cac | gac | gcc | att  | atg | gca | cgc | gtt | ctt  | gat | aag | ccg | cag  | aca | gct | gat | 3027 |
| 288 | His | Asp | Ala | Ile  | Met | Ala | Arg | Val | Leu  | Asp | Lys | Pro | Gln  | Thr | Ala | Asp |      |
| 289 |     |     |     | 990  |     |     |     |     | 995  |     |     |     | 1000 |     |     |     |      |
| 291 | gtg | ttc | cag | aat  | aag | gtg | aac | gtc | tgc  | tgg | gcg | aag | gct  | tta | gag |     | 3072 |
| 292 | Val | Phe | Gln | Asn  | Lys | Val | Asn | Val | Cys  | Trp | Ala | Lys | Ala  | Leu | Glu |     |      |
| 293 |     |     |     | 1005 |     |     |     |     | 1010 |     |     |     | 1015 |     |     |     |      |
| 295 | cca | gtc | ttg | gcc  | acg | gcc | aac | att | gtg  | ctg | acg | aga | cag  | cag | tgg |     | 3117 |
| 296 | Pro | Val | Leu | Ala  | Thr | Ala | Asn | Ile | Val  | Leu | Thr | Arg | Gln  | Gln | Trp |     |      |
| 297 |     |     |     | 1020 |     |     |     |     | 1025 |     |     |     | 1030 |     |     |     |      |
| 299 | gag | acg | ttg | cac  | cca | ttc | aag | cat | gac  | aga | gcg | tac | tca  | cct | gaa |     | 3162 |
| 300 | Glu | Thr | Leu | His  | Pro | Phe | Lys | His | Asp  | Arg | Ala | Tyr | Ser  | Pro | Glu |     |      |
| 301 |     |     |     | 1035 |     |     |     |     | 1040 |     |     |     | 1045 |     |     |     |      |
| 303 | atg | gca | ctg | aac  | ttc | ttt | tgc | acc | agg  | ttc | ttt | gga | gta  | gac | ctg |     | 3207 |
| 304 | Met | Ala | Leu | Asn  | Phe | Phe | Cys | Thr | Arg  | Phe | Phe | Gly | Val  | Asp | Leu |     |      |
| 305 |     |     |     | 1050 |     |     |     |     | 1055 |     |     |     | 1060 |     |     |     |      |
| 307 | gac | agt | ggg | tta  | ttt | tcc | gct | cct | acc  | gtc | gca | ctt | act  | tac | agg |     | 3252 |
| 308 | Asp | Ser | Gly | Leu  | Phe | Ser | Ala | Pro | Thr  | Val | Ala | Leu | Thr  | Tyr | Arg |     |      |
| 309 |     |     |     | 1065 |     |     |     |     | 1070 |     |     |     | 1075 |     |     |     |      |
| 311 | gat | cag | cac | tgg  | gat | aac | tcg | cca | ggg  | aag | aac | atg | tat  | ggg | ctt |     | 3297 |
| 312 | Asp | Gln | His | Trp  | Asp | Asn | Ser | Pro | Gly  | Lys | Asn | Met | Tyr  | Gly | Leu |     |      |
| 313 |     |     |     | 1080 |     |     |     |     | 1085 |     |     |     | 1090 |     |     |     |      |
| 315 | aat | aga | gag | gta  | gca | aag | gag | ttg | tca  | cgg | cga | tat | ccg  | tgc | atc |     | 3342 |
| 316 | Asn | Arg | Glu | Val  | Ala | Lys | Glu | Leu | Ser  | Arg | Arg | Tyr | Pro  | Cys | Ile |     |      |
| 317 |     |     |     | 1095 |     |     |     |     | 1100 |     |     |     | 1105 |     |     |     |      |
| 319 | aca | aaa | gcg | gtt  | gac | aca | ggc | agg | gta  | gct | gat | ata | agg  | aat | aat |     | 3387 |
| 320 | Thr | Lys | Ala | Val  | Asp | Thr | Gly | Arg | Val  | Ala | Asp | Ile | Arg  | Asn | Asn |     |      |
| 321 |     |     |     | 1110 |     |     |     |     | 1115 |     |     |     | 1120 |     |     |     |      |
| 323 | acc | atc | aag | gac  | tac | tct | cca | aca | att  | aat | gtg | gtt | cca  | tta | aat |     | 3432 |
| 324 | Thr | Ile | Lys | Asp  | Tyr | Ser | Pro | Thr | Ile  | Asn | Val | Val | Pro  | Leu | Asn |     |      |

**VERIFICATION SUMMARY**

DATE: 01/09/2003

PATENT APPLICATION: US/10/023,649

TIME: 13:34:42

Input Set : D:\NEL-0001 Sequence Listing.txt

Output Set: N:\CRF4\01092003\J023649.raw

L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:2675 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:7  
L:2681 M:259 W: Allowed number of lines exceeded, <223> Other Information: